Space Weather Forecast

Issued on Thursday, 26 October 2023 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with a number of Common-class flares in the past 24hrs. The largest of these a low level Common-class flare peaking at 25/0001 UTC from an active but spotless region rotating around the NE limb. There are currently just two small and relatively simple sunspots on the visible disc, both located in the southwest quadrant, with no new development observed in recent imagery.

No Earth-directed CMEs have been observed, although there have been some faint CMEs evident in coronagraph imagery from limb or far sided sources.

Solar Wind / Geomagnetic Activity: The solar wind persisted at background conditions with speeds in the range 300-350km/s. Interplanetary Magnetic Field (IMF) was weak. The north-south component was also weak and predominately positive (northward) at first, before becoming more variable. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Low activity forecast with occasional common class flares. There is a slight chance of Moderate flares, with the main risk currently from the small sunspot just west of the southern centre disc.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs. Background winds are expected to become briefly enhanced by the arrival of the fast winds from a weak coronal hole, most likely on day 2 (27 Oct). Any enhancement is expected to be minimal with winds likely peaking around 450 km/s, before easing day 3 (28 Oct). The next potential enhancement from fast winds is expected to be from larger and stronger looking east hemisphere coronal holes, which could arrive late on day 4 (29th), but more likely into 30th.

Geomagnetic activity is forecast to be mainly Quiet, rising to Unsettled with Active spells possible with any fast wind onset day 2 (27 Oct). Activity could then become elevated by the end of day 4 (29th) with a slight chance of reaching G1/Minor Storm level, should the eastern coronal holes become geo-effective. However, this is low confidence.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	15	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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